TIME AND WORK

L. VALLIAPPAN
39111054
19311355

1) A can do a work in 14 days. And working together A and B can do the same work in 10 days. In what time can B alone do the work.

a) 25 days b) 30 days c) 23 days d) 35 days

$A + B = 1/10$

$A = 1/14$

$1/14 + B = 1/10$

$B = \frac{1}{10} - \frac{1}{14}$

$B = \frac{14-10}{140}$

$B = \frac{4}{140} \Rightarrow B = \frac{2}{70} \Rightarrow B = \frac{1}{35} \Rightarrow 35$ days

2) Manu, Manju and Maya can do a work in 90, 30, 45 respectively. If they work together, in how many days will they complete a work?

a) 15 b) 10 c) 20 d) 25.

$\frac{1}{90} + \frac{1}{30} + \frac{1}{45} \Rightarrow \frac{1+3+2}{90} = \frac{6}{90} = \frac{2}{30} = \frac{1}{15}$

15 days

3) 40 men can catch 200 sharks in 20 days working 6 hours per day. In how many days 25 men can catch 300 sharks working 4 hours per day?

a) 30 b) 34 c) 24 d) 20.

40 men → 200 Shark → 20 × 6 = 120 HRS

25 men → 300 shark → ? × 4 = ?

1 men can catch $\frac{200}{40} = 5$ sharks in 20 days of 6 HRS working

25 men can (25 × 5) = 125 sharks in 20 days of 6 HRS working

1 men → $\frac{5}{120}$ in 1 hr → $\frac{1}{24}$

25 men can → $\frac{1}{24} \times 25 = \frac{25}{24}$

M1 = 40, M2 = 25 D1 = 20 days D2 = ? H1 = 6 hours

H2 = 4 hours W1 = 200 Shark W2 = 300 Shark.

L. VALLIAPPAN
3911105H
19511355

$\frac{M_1 D_1 H_1}{W_1} = \frac{M_2 D_2 h_2}{W_2}$

$\frac{10 \times 20 \times 6}{2} = \frac{25 \times D_2 \times 4}{3}$

$600 = 25\ D_2$

$D_2 = \frac{600}{25} = 24$

4) Amit and Ananthu can do a work in 15 days and 25 days respectively. Amit started the work and left after 3 days. Ananthu took over and completed the work. In how many days work completed totally.

a) 28 days b) 20 days c) 23 days d) 25 days

Amit 1 day work = 1/15

Ananthu 1 day work = 1/25.

Amit 3 day work = $1/15 \times 3 = \frac{1}{5}$

work left of amit = $1 - \frac{1}{5} = \frac{4}{5}$

$\frac{4}{5}$ done by Ananthu = $\frac{4}{5} \times \frac{25}{1} = 4 \times 5 = 20$ days.

20 + 3 = 23 days.

5) If A is thrice as fast as B and together can do a work in 21 days. In how many days A alone can do the work?

a) 36 b) 42 c) 28 d) 54.

A's one day's work = 1/x

B's one day's work = $\frac{1}{3x}$

A + B one day work $\Rightarrow \frac{1}{x} + \frac{1}{3x} = \frac{1}{21}$

$\Rightarrow \frac{3+1}{3x} = \frac{1}{21}$

$\Rightarrow \frac{4}{3x} = \frac{1}{21}$

A + B's one day work $\Rightarrow x = \frac{21 \times 4}{3} = 28$

L.VALLIAPPAN
39111054
19S111355

6) 9 men can do a work in 12 days working 4 hours daily. In how many days can 6 men do the same work, working 8 hours a day.

a.) 18 b.) 9 c.) 10 d.) 8

M1 = 9 D1 = 12 H1 = 4 hours

M2 = 6 D2 = ? H2 = 8

$x = D2$

$9 \times 12 \times 4 = 6 \times x \times 8$

$x = \frac{9 \times 12 \times 4}{6 \times 8}$

$x = 9$

7) Rohit and Rohan complete a work in 12 days and 6 days respectively. How much time will they take when working together?

a.) 4 b.) 3 c.) 5 d.) 2

$\frac{1}{12} + \frac{1}{6} \Rightarrow \frac{1+2}{12} = \frac{3}{12} = \frac{1}{4}$ $\Rightarrow$ 4 days

8) Sita and sinu together can do a work in 50 days. whilth the help of Smitha, they completed the work in 6 days and earn 250RS. what is the share of sinu if Sita alone do the work in 100 days?

a.) RS. 15 b.) RS. 18 c.) RS. 20 d.) RS. 25

Sinu's one day work $= \frac{1}{50} - \frac{1}{100}$

$= \frac{2-1}{100}$

Sinu's work of one day $= 1/100$

Sinu's 6 day work $= 6 \times \frac{1}{100} = \frac{6}{100} = \frac{3}{50}$

Sinu completed $\frac{3}{50}$ of work and share is $= \frac{3}{50} \times 250 =$ RS. 15

9) A and B can do a work in 60 days, B and C can do it in 120 days A and C can do in 80 days. In what time A alone can do work?

a) 100 b.) 90 c.) 80 d.) 70

$A+B = 1/60$ - (1)

$B+C = \frac{1}{120}$ - (2)

$A+C = \frac{1}{180}$ - (3)

Add (1) + (2) + (3)

$2(A+B+C) = \frac{1}{60} + \frac{1}{120} + \frac{1}{80}$

$2(A+B+C) = \frac{12+6+9}{720} = \frac{27}{720} = \frac{9}{240} = \frac{3}{80}$

L.VALLIAPPAN
39111054
19511135

$(A+B+C)'s$ work $= \frac{3 \times 1}{80 \times 2} = \frac{3}{160}$

A's 1 day work $= \frac{3}{160} - \frac{1}{120}$

$= \frac{3(120) - 160}{120 \times 160}$

$= \frac{360 - 160}{19200}$

$= \frac{200}{192 \cancel{00}}$

$= \frac{2}{192}$

$= \frac{1}{91}$ → (91 days)

10) Renu can do a piece of work in 6 days, but with the help of her friend soma, she can do it in 4 days. In what time soma can do it alone.

a.) 10 b.) 12 c.) 14 d.) 15

$\frac{1}{6} + x = \frac{1}{4}$

$x = \frac{1}{4} - \frac{1}{6} \Rightarrow \frac{3-2}{12} = \frac{1}{12}$ → (12 days)

11.) A can finish a work in 20 days, B in 15 days, C in 12 days B and C start the work but are forced to leave after 2 days. The remaining work was done by A is

a.) 10 b.) 11 c.) 13 d.) 14.

$(B+C)'s$ one day work $= \frac{1}{15} + \frac{1}{12} = \frac{4+5}{60} = \frac{9}{60} = \frac{3}{20}$

$(B+C)'s$ 2 day work $= 2 \times \frac{3}{20} = \frac{3}{10}$

Remaining work $= 1 - \frac{3}{10} = \frac{7}{10}$

A can do work in 1 day $= \frac{1}{20}$

So $\frac{7}{10}$ work of A done in $= \frac{7}{1} \times 20 =$ (14 days)

12.) Anu can do a work in 6 days and Binu alone in 9 days. Anu and Binu undertook to do it for RS.4500. with help of minu, they completed the work in 3 days. How much is to be paid to Minu and Anu?

a.) RS.750, RS.2250 b.) RS.2000, RS.750 c.) RS.950, RS.2000

d.) RS.800, RS.1250.

L. VALLIAPPAN
39111054
195111355

Minu's one day work $= \frac{1}{3} - \frac{1}{6} - \frac{1}{9}$

$= \frac{6-3-2}{18}$

$= \frac{6-5}{18}$

Minu's one day work. $= \frac{1}{18}$

Anu's : Binu's : Minu's $= \frac{1}{6} : \frac{1}{9} : \frac{1}{18} \rightarrow 3 : 2 : 1$

Minu's share $= \frac{1}{6} \times 4500 = \frac{4500}{6} = \frac{1500}{2} = 750$ RS

Anu's share $= \frac{3}{6} \times 4500 = \frac{1}{2} \times 4500 = 2250$ RS

→ Ans coer

13.) Ram, Krish and Bhim can complete a work in 30 days. If Ram and Krish together can complete the same work in 40 days, then how long will Bhim take to complete it.

a.) 60 b.) 80 c.) 100 d.) 120

Ram + Krish + Bhim $= \frac{1}{30}$

Ram + Krish $= \frac{1}{40}$

$\frac{1}{40} + x = \frac{1}{30}$

$x = \frac{1}{30} - \frac{1}{40}$

$x = \frac{4-3}{120} = \frac{1}{120} =$ 120 days

14.) 3 workers transfer a tool weighing 120 kg in 12 seconds. How many men are required to transfer it in 9 seconds?

a.) 4 b.) 5 c.) 6 d.) 8

M1 = 3 workers D1 = 120 kg H1 = 12 seconds

M2 = ? D2 = 120 kg H2 = 9 seconds

$3 \times 12 \times 12 = M2 \times 120 \times 9$

$M2 = 4$

15.) There is enough provisions for 600 men in an army camp for 25 days. If there were 300 men less, How long will the provision last?

a.) 35 days b.) 40 days c.) 45 days d.) 50 days

M1 = 600 D1 = 25 days M2 = 600 − 300 = 300 D2 = ?

M2 = 300

$M1 \times D1 = M2 \times D2$

$600 \times 25 = 300 \times x \rightarrow x = D2 = 50$

L.VALLIAPPAN
39111054
19511355

16) 2 men and 4 boys can do a work in 4 days. 5 men and 6 boys can complete the same work in 3 days. The work done by 2 boys is equal to work of how many men?

a) 4 b) 5 c) 6 d) 7

$2m + 4b = \frac{1}{4}$ — (1)

$8m + 16b = 1$ — (3)

$5m + 6b = \frac{1}{3}$ — (2)

$15m + 18b = 1$ — (4)

(3) − (4)

$8m + 16b = 1$

$15m + 18b = 1$

$-7m - 2b = 0$

$-7m = +2b$

Ignore signs

$7m = 2b$

17) A is twice as good as work man as B. and together they complete a work in 12 days. In how many days A alone can do the work?

a) 32 b) 34 c) 35 d) 36

A's one day work : B's one day work

2 : 1

$(A+B)$'s one day work $= \frac{1}{12}$

B's one day work $= \frac{1}{12} \times \frac{1}{3} = \frac{1}{36}$ → B can do in 36 days

18) Two pipe can fill a tank in 12 minutes and 20 minutes respectively. Both pipes are opened together and after some time the first pipe is closed and tank is full in totally 10 minutes. For how many minutes was first pipe open.

a) 8 minutes b) 6 minutes c) 7 minutes d) 10 minutes

2nd pipe → $\frac{1}{20}$ for 1 minute ⇒ 2nd pipe for 10 minutes $= 10 \times \frac{1}{20} = \frac{1}{2}$

$30 = 1 - \frac{1}{2} = \frac{1}{2}$ → for first pipe

time of first pipe opened is $= \frac{\frac{1}{2}\text{ work}}{\frac{1}{12}} \Rightarrow \frac{1}{2} \times \frac{12}{1} = 6$ minutes

19) Two pipes can fill a tank in 15 minutes and 12 minutes. The outlet pipe can empty the tank in 20 minutes. If all pipes are opened when the tank is empty, then in how many minutes will it take to fill the tank?

a) 12 b) 13 c) 11 d) 10

$\frac{1}{15} + \frac{1}{12} - \frac{1}{20} = \frac{40 + 50 - 30}{600}$

$\frac{90 - 30}{600} = \frac{60}{600} = \frac{60}{600}$

$= \frac{1}{10}$

L.VALLIAPPAN
39111054
19311355

20.) pipe A can fill a tank in 12 hours. Due to a leak at the bottom it takes 20 hours to fill the tank. In what time the leak alone can empty the full tank?

a.) 18 hours b.) 23 hours c.) 28 hours d.) 30 hours ✓

$$\frac{1}{12} - \frac{1}{x} = \frac{1}{20}$$

$$\frac{1}{x} = \frac{1}{20} - \frac{1}{12}$$

$$\frac{1}{x} = \frac{12-20}{240}$$

$$\frac{1}{x} = \frac{-8}{240}$$

Ignore sign

$$\frac{1}{x} = \frac{1}{30}$$

$$\frac{1}{x} = \frac{1}{30} \rightarrow (x = 30)$$